

[LOW TEMPERATURE POLYSILICON THIN FILM TRANSISTOR AND METHOD OF FORMING POLYSILICON LAYER OF SAME]

Abstract

A low temperature polysilicon thin film transistor and a method of forming the polysilicon layer inside the thin film transistor. An amorphous silicon layer is formed over a panel. The panel has a display region and a peripheral circuit region. A metallic layer is formed over a portion of the amorphous silicon layer in the peripheral circuit region. A crystallization process is performed to transform the amorphous silicon layer in the peripheral circuit region into a polysilicon layer. Thereafter, an excimer laser annealing process is performed to increase the grain size of the polysilicon layer in the peripheral circuit region and, at the same time, transform the amorphous silicon layer in the display region into a polysilicon layer. Since the average grain size of the polysilicon layer in the peripheral circuit region is larger, electron mobility is increased as demanded. Similarly, since the average grain size of the polysilicon layer in the display region is smaller, leakage current is decreased as demanded.